
SEVENTH ANNUAL REPORT

OF THE

DAIRY BUREAU

OF THE

MASSACHUSETTS BOARD OF AGRICULTURE,

REQUIRED

UNDER CHAPTER 412, ACTS OF 1891.

JANUARY 15, 1898.

BOSTON :
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DAIRY BUREAU — 1897-98.

D. A. HORTON, NORTHAMPTON, *Chairman.*

GEO. L. CLEMENCE, SOUTHBRIDGE.

J. L. ELLSWORTH, WORCESTER.

Executive Officer.

W. R. SESSIONS, *Secretary of the State Board of Agriculture.*

Assistant to the Secretary and Acting Executive Officer, appointed by the Governor.

GEO. M. WHITAKER, BOSTON.

REPORT.

The membership of the Dairy Bureau has continued through the year the same as at the time of our last report, Mr. J. L. Ellsworth of Worcester having been reappointed. The active executive work has continued under the charge of George M. Whitaker, who has been reappointed for another biennial term. The statute title of this position is very misleading. The Bureau has had in its employment during the year three agents, the same ones previously reported, Messrs. J. W. Stockwell, George F. Baldwin and Charles C. Scott. Dr. Charles Harrington, the Boston milk inspector, and his staff are also agents of the Bureau, serving without compensation from the State, in order to promote harmony and efficiency of action. The chemical work has been done by Dr. B. F. Davenport.

OLEOMARGARINE.

The work of the Bureau in enforcing the laws relative to imitation butter has been statistically as follows : —

Number of inspections,	1,986
Samples taken,	212
Cases in court,	26

Of these, in only two instances were the defendants acquitted.

Complaints were made for the following causes : —

Selling or having in possession with intent to sell an imitation of yellow butter,	16
Serving oleomargarine in hotels and restaurants without giving notice,	5
Obstructing officers,	5

The court cases are fewer than last year, but do not represent any diminution in the work. The number of arrests is

not a gauge of the efficiency of a police force. The open selling of deceptive imitation butter has been suppressed, but as the illegal traffic in this imitation product is crowded into more limited quarters, the amount of detective work necessary to secure evidence of a violated law is largely increased. We have this year convicted some persistent violators of the law, in some cases driving them out of the Commonwealth. To bring this about necessitated in some cases weeks of careful work. One case in particular was of more than ordinary interest, and illustrates the difficulties attending the work and the chances that the greed of gain will lead unscrupulous persons to take.

Complaint came to us early in the year from a town in Middlesex County that a peddler had been through the town selling what purported to be Vermont creamery butter at a low price. Samples were secured, analyses made, and the article was found to be oleomargarine, which had been sold as butter from tubs labelled creamery butter, the United States revenue stamps and brands having been removed. We had no knowledge of the name of the party, his residence or his routes, and a number of months' work was necessary in order to supply this information. We found he had several teams and men, and was doing a large business. Then it was necessary to locate him somewhere, and get legal evidence of violation of law from samples whose identity could be positively traced. Then came warrants for his arrest, and, having obtained these, it was again necessary to find where he was to be at some particular time, and to have officers there to serve the papers upon him. We had learned that he was an athletic fellow, given to boasting of his strength, and as a matter of precaution six officers were detailed to surround the house in which he lived, and arrest him. He gave two of the officers a rough-and-tumble chase, but they secured him. Taken into court, he was found guilty, and paid two hundred dollars, other cases being held against him for good behavior. It was not long, however, before he was heard of at his old tricks, and after a number of weeks' work was located and re-arrested. This time he gave two officers a long chase, and was not taken until shots had been fired. Detained in the lockup at South Framingham, he managed to

break out, when he was met by a pal, and the pair rode hastily with one change of horses to Rhode Island, not, however, until the lockup keeper had implanted a bullet in his thigh.

This illustrates some of the difficulties in securing a big statute record. Itinerant peddlers retailing about the State without any particular route, never more than a half day in a place, are hard to get evidence against, and, having secured it, and a warrant, they are hard to re-locate and arrest. An agent working on such a case cannot take many samples or inspect many places of business.

Another reason for the diminution in the number of cases in court is an increased conservatism on our part in multiplying cases, as we find much hesitancy among judges of the district courts to entertain more than one complaint based on one transaction. The first case that we had this year was where (1) a man had sold an imitation of yellow butter; (2) had sold it as butter; (3) had sold it without the proper marks on the tub; (4) had sold it labelled "creamery;" and (5) sold it without the distinctive marks and signs required on the wagon,—a violation of five laws of the State, but only one complaint was made. In nearly every case that we have had this year three or four laws have been violated.

During the past year we have changed our policy relative to the statute under which we have brought cases. Heretofore, recognizing that the sale of oleomargarine as butter and when butter was called for was an unquestioned moral offence, as well as a statutory one, we preferred to bring cases under that law (section 2, chapter 280, Acts of 1894) when possible, feeling that we might appeal more strongly to the court than in a case for selling (or having in possession with intent to sell) an imitation of yellow butter. But experience showed us that as a practical matter we were in error. In the former class of cases we had more to prove. It was not only necessary to show that there had been a sale of an imitation of yellow butter, but it was necessary to prove beyond a reasonable doubt that it was sold in response to a call for pure butter. Not infrequently the defendant would attempt to save himself a fine either by contradicting our

agents outright in denying that butter was called for, or else by claiming that he did not understand, and supposed butterine was called for. In such cases the judge frequently was not convinced beyond a reasonable doubt that the offence charged had been proved. This year we have brought no cases under that statute, although in nine instances the oleo was sold as and for butter; but the complaint made charged that the defendant did sell, expose for sale, or have in his possession with intent to sell —

a certain quantity, to wit, one pound of a certain product commonly called oleomargarine, made partly out of an oleaginous substance not produced from unadulterated milk or cream from the same, and that said product was then and there in imitation of yellow butter produced from pure unadulterated milk or cream of the same.

The evidence in this case is more easily secured, and less easily contradicted. As a result, we have not lost one of these cases. Of the two cases lost, one was for obstructing an officer, in which case our evidence was weak. The other was where oleomargarine had been served for butter in a café connected with a hotel. On the trial of the case the proprietor of the hotel swore that he had leased the café, and was not responsible for its management. Although having no connection with this case, we were much interested in learning, a few weeks after, that the landlord's license to sell intoxicating liquors had been taken from him for violating the provisions of the liquor law.

The great source of our trouble continues to be the State of Rhode Island, which is behind the other New England States in pure-food legislation. The whole system of peddlers and of selling on orders has its headquarters in Rhode Island. In one case the court decided that selling on orders is an evasion of the law, and the party was convicted. The defence in this case introduced the following: —

DEAR SIR:— You are hereby requested to act as my agent in getting and delivering to me the following merchandise:—

Number

Date

Signature

Number of tub

Vermont.

The defence, having submitted this form of order, argued that the purchaser on signing this really made the defendant his agent; and that the defendant, as agent for the consumer, purchased these goods in Rhode Island. The judge held that the circumstances in the case convinced him that the order was a subterfuge, and an attempt to evade the law; consequently he held the defendant, who appealed, but withdrew his appeal and pleaded guilty in the superior court.

Doubtless in some instances oleomargarine is honestly desired. Unquestionably there are persons who from various motives prefer to use a mixture of lard and tallow in place of butter; but when it is sold in imitation of yellow butter, with a misleading name, or by companies with deceptive titles, there is a suspicion that consumers hardly realize what they are buying, and are more or less imposed upon by the deceptive nature of the brand or of the company doing business. In one instance we found that a peddler had been selling the goods marked "Oakdale Standard" as butter to ignorant families who did not know that this expression was the trademark of one of the large oleomargarine dealers. It is possibly true that now and then a person who honestly wants to purchase oleomargarine for legitimate use has been troubled to get it; but where any annoyance has been occasioned in the honest sale of a pound, we believe that the dishonest sale of ten pounds has been prevented. It should be remembered that it is perfectly legal to sell oleomargarine in this State, in a separate and distinct form, and in such a manner as will advise the consumer of its real character. But oleomargarine in that shape is a drug on the market. Its value as a commercial product comes not from the food value which the scientific men may find in it, but from the perfection of the imitation of butter. There is a theoretical oleomargarine of the chemists' laboratory, which has a food value; there is the oleomargarine of commerce, which as an imitation of butter is a constant temptation to swindling, and the temptation is seldom resisted. The supreme court of the United States says of the Massachusetts anti-color law:—

The suggestion that oleomargarine is artificially colored so as to render it more valuable and attractive can only mean that purchasers are deluded by such coloration into believing that they are

getting genuine butter. . . . The statute seeks to suppress false pretenses, and to promote fair dealing in the sale of an article of food. . . . Does the freedom of commerce among the States demand a recognition of the right to practise a deception upon the public in the sale of any articles, even those that may have become the subjects of trade in different parts of the country? . . . If an article compounded of cheaper ingredients can be made so closely to resemble butter that ordinary persons cannot distinguish it from genuine butter, the liability to deception is such that the protection of the public requires those dealing in the article in some way to designate its real character. . . . It is within the power of a State to exclude from its markets any compound manufactured in another State which has been artificially colored or adulterated so as to cause it to look like an article of food in general use, and the sale of which may, by reason of such coloration or adulteration, cheat the general public into purchasing that which they may not intend to buy. The constitution of the United States does not secure to any one the privilege of defrauding the public. The deception against which the statute of Massachusetts is aimed is an offence against society.

The following is a summary of the receipts, exports, stocks and consumption of butter at Boston for the past year, as compared with the year previous:—

	1897. Pounds.	1896. Pounds.
On hand January 1,	2,898,000	1,659,434
Receipts for the year,	51,107,033	50,972,255
Total supply,	54,005,033	52,631,689
Exports, deduct	3,286,333	3,156,741
Net supply,	50,718,700	49,474,948
Stock, deduct	2,620,680	2,898,080
Consumption,	48,098,020	46,576,868

The above statement shows that the consumption of butter supplied by the Boston market increased about three per cent last year, as compared with the year previous, and averaged about 925,000 pounds per week. If, by having

no laws regulating the sale of imitation butter, oleomargarine had been sold as butter, deceptively, to an amount equalling one per cent of the above consumption, the amount would be 480,980 pounds. We think that this assumption is a moderate one, from what we know of the history of the oleomargarine business, both before and after the passage of the laws, and the tendency to sell the mixture dishonestly. The average wholesale price of fresh-made extra creamery butter has been, during each month for the year, compared with two preceding years:—

	1897. Cents.	1896. Cents.	1895. Cents.
January,	20-22	22-26	24-26
February,	20-22	21-24	22-25
March,	19-23	22-24	20-23
April,	17½-22	16-22	19-21
May,	15½-18	15-17	17-19
June,	15-16	15-16½	18-20
July,	15½-16½	15-16½	18-19
August,	15½-19	15-17½	20-21
September,	18-22	15½-17½	20-22
October,	21-22½	16-20	21-23
November,	21-22	18-21	22-23
December,	21-23	20-23	23-28

If an amount of oleomargarine equal to one per cent of the sales of butter had been sold dishonestly, this amount at 20 cents per pound would equal \$96,196 to the credit of the law and its enforcement, leaving out of the account the butter supplied from other commercial centres in the State, like Worcester and Springfield. This is considering only the commercial side of the case, and not recognizing the fraud on the consumer. This fact in itself ought to be a vindication of the law and a proof of its economy.

Many States have patterned after Massachusetts in dairy legislation. Although Massachusetts is not emphatically a dairy State, it has set the pace for the whole country in dairy laws. This is in a measure due to the fact that the first color case to reach the United States supreme court came from Massachusetts, and was handled with such consummate ability by Hon. A. E. Pillsbury as to secure a vindication of the law in a decision from which we have quoted above. Since then many other States have followed our example, and adopted laws almost word for word like those of this State. Probably there is no other matter in which there is so much uniformity in legislation. Some States, however, in enacting this law have provided additional safeguards against the improper sale of a deceitful imitation product, some of which are as follows:—

California declares that any article made in semblance of butter, and designed to be used as a substitute for butter, is an imitation of butter. The use of imitation butter in public or private hospitals, asylums, eleemosynary or penal institutions is prohibited. No common carrier shall receive imitation dairy products for the purpose of forwarding or transporting the same, unless they are properly branded and receipted for under their true name. The use of the word “butterine” is prohibited. Search warrants may be issued for imitation butter or cheese, which may be seized if kept in violation of the law.

The laws of Ohio not only give the dairy commissioner authority to enter any place where dairy products are sold, but go so far as to authorize him to examine the books in such places.

In Minnesota, express agents, railroad officials and employees of common carriers are required to render to the dairy commissioner all the assistance in their power, when so requested, in discovering the presence of any imitation of pure butter or cheese. The commissioner is authorized to seize imitation and adulterated dairy products, and after order of the court sell the same for any purpose other than to be used for food.

Connecticut has a law authorizing the dairy commissioner to inspect the books of transportation companies, in order to trace illegal sales of oleomargarine.

Wisconsin authorizes the issuing of warrants to search places where imitation butter or cheese is believed to be concealed, and provides for the confiscation of such imitation dairy products, and their destruction under the direction of the court or magistrate.

Michigan provides that "the taking of orders or the making of agreements or contracts by any person, firm or corporation, or by any agent or representative thereof, for the future delivery of any of the articles, products, goods, wares or merchandise embraced within the provisions of this act, shall be deemed a sale."

Critics of the oleomargarine laws sometimes raise the point that there is sometimes a departure from strict honesty in handling some grades of real butter. There is no logic in this. If A is guilty of deception, his fault is not lessened because B has also practised deception. It is a fact that there are some things in the butter trade which cannot be wholly approved. But it doesn't help one man out of the mud to find some one else with his coat spattered. The processes for working and renovating low-grade butter have been so perfected as to render the product a satisfactory article for quick consumption; still, as it is ordinarily sold, it is more or less tainted with deception. The product really comes from the cow's udder, but when it is sold as "fresh creamery butter" it is a fraud on the consumer and an injury to legitimate business. This product till recently has been known in the trade as "process butter," and by that name it could be honestly sold, although when it was distributed by the retail trade it frequently became "fresh creamery." Latterly the trade has adopted the name of "sterilized butter," which is not only a misnomer, but deceptive. The word "process" was open to objections, but the expression "sterilized" is even worse. We have had a number of specimens of these kinds of butters analyzed, and in each case the chemist has reported that the product was in some respects unusual, although he was obliged to class it with the pure butters.

We understand that the process of melting and aerating butter and re-working it in fresh milk was begun some seven or eight years ago. From that starting point the business has

extended so that there are large factories in some six or eight different places in the west. We have seen it stated that the total output of these places is fully four hundred tubs a day. The exact method of making these goods is not known. In some cases different firms have varying methods peculiar to themselves, but in a general way the process is something like this: the butter is bought either from farmers or from dealers, melted into oil, carefully strained, then aerated by pumping currents of air through it, and finally chilled by dropping onto ice or a cold surface. The granules are then churned with milk, and the product is salted, worked and packed. Fair flavor and character are the rule, but, having been once melted, the butter is peculiarly sensitive, and quickly loses its freshness; some lots become tallowy. We have a suspicion that some dishonest manufacturers may mix in more or less tallow and lard in the process of manufacturing this "sterilized" butter. We found one sample in the hands of a reputable retail grocer which was unquestionably oleomargarine. We were able to trace the shipment with such directness through a leading Boston wholesaler to a large Chicago manufacturer that we felt no end of justice would be promoted by a prosecution in this State. The facts, however, were placed in the hands of the Illinois authorities for further investigation.

MILK.

More attention has been given to milk than any previous year. Two hundred and thirteen samples have been taken, though only one case was put into court. In this the milk was actually adulterated, but it was lost by a ruling on a law point by an associate justice of the court sitting during the vacation season. A transportation corporation had a café at one of its stations, and served adulterated milk. Samples taken tested 10.42 and 8.14 per cent of milk solids. The manager of the café was complained of, and his attorney raised the point that, under the statute holding responsible either the principal or his agent or servant, we could hold the corporation itself or the waiter who served the adulterated milk; but the attorney argued that the manager of whom we had complained was neither the servant who sold

the adulterated milk nor the principal. The justice ruled that, as the manager of the café was not personally present at the time that the waiter served the milk, he was not responsible. Another case was brought before the regular justice of the court at the conclusion of the vacation season, but by this time the defendant had left the State and could not be found.

The agricultural papers and scientific men have been discussing the idea of a statute standard of milk to an unusual extent during the past year. The principle is well established in Massachusetts, and is endorsed both by consumers and producers. Farmers' organizations have time and time again passed resolutions favoring it. Many cows produce milk of less than 13 per cent solids, but they are a minority. The Massachusetts law says milk below 13 per cent — with an exception of some summer months — is not "of standard quality," and is therefore unmerchantable as standard milk. One critic says: "What the farmer needs and has a right to ask is that the law shall not step in and try to punish him because the Creator did not make all cows alike." This is a misapprehension of the spirit of the law. Milk of standard price must be of standard quality. The opposition to the law has hitherto been largely from men whose cows produced milk poorer than the average, and who wanted to sell this poorer milk as standard milk. These persons, under the fallacious pretext that cows could not give as good milk in the summer as in winter, have succeeded in getting the very generous exception of five months in which 12 per cent is declared to be standard milk. This assertion about summer milk is not founded on fact. Mr. Clemence of the Dairy Bureau has for several years made occasional tests — usually about once a month — of the mixed milk of his herd, mostly grade Shorthorns, and he has not only found it fully up to the standard, but he has found it very uniform in quality, varying less than .4 of 1 per cent, and usually less than .2 of 1 per cent, from month to month. Many similar experiments are on record. The most recent is from the New Jersey Experiment Station. The herd there consisted of 28 cows; 23 were of mixed breeding, with 2 each of Holstein and Guernsey blood and 1 Jersey. From 18 to 26

cows were milked each month. Each month except one several fresh cows were introduced, as many as 4 each in September and March. The following is the average per cent of fat in the mixed milk (fat is the most variable element of milk, and the one that governs its quality) : —

May,	4.2	November,	4.2
June,	4.3	December,	4.2
July,	4.3	January,	4.3
August,	4.4	February,	4.1
September,	4.3	March,	4.0
October,	4.4	April,	4.1

This shows the constant quality of herd milk, and that there is no marked seasonable falling off during any particular month or months.

The present attack on the statute standard comes from persons who preach that milk should be sold according to quality. With this contention we are in sympathy, and believe that milk will be sold that way in the future. There is no sense in selling 10 or 13 or 16 pounds of food all at the same price. But the advance step should not be taken at the expense of losing any of the advantages of the present law. We hardly think that the times are yet ripe for such a change, as, from the stand point of those having some experience in enforcing the law, it would let in a large amount of adulteration.

Laws against adulteration seem as yet to need a standard. Wealthy or intelligent people could discover fraud in milk, but the ignorant would suffer imposition, and the poor might be comparatively helpless.

There is nothing in the law now to prevent milk being sold on its merits in three grades ; 1st, extra ; 2d, standard ; 3d, skimmed.

A man with Jersey or Guernsey stock is now at liberty to make a 14 or 15 per cent milk, grade it as extra, guarantee its extra quality, and sell it at an extra price if he can find customers. On the other hand, milk low in solids can be sold at a low price by labelling it skimmed milk, — which in some instances is not far from the truth.

We hope to see many enterprising dairymen try this experiment of selling extra milk at an advance from the going

price. This ought to prove advantageous to them, and also an education to the public, being an object lesson of the differing values of milk. It would thus serve to bring nearer the time when it may be expedient to change the laws relative to the statute standard.

The following is the result of some analyses of milk taken from milkmen by officers of the State Dairy Bureau in the regular discharge of their routine duties, and throws an accurate side light on the per cent of solids sold. These samples were taken in May and June.

Worcester.

Milkman No. 1, . . .	12.84	Milkman No. 15, . . .	13.48
No. 2, . . .	12.88	No. 16, . . .	13.64
No. 3, . . .	12.20	No. 17, . . .	14.08
No. 4, . . .	12.60	No. 18, . . .	14.02
No. 5, . . .	12.76	No. 19, . . .	12.62
No. 6, . . .	13.00	No. 20, . . .	14.22
No. 7, . . .	14.34	No. 21, . . .	12.52
No. 8, . . .	12.40	No. 22, . . .	12.12
No. 9, . . .	14.22	No. 23, . . .	13.78
No. 10, . . .	12.04	No. 24, . . .	12.40
No. 11, . . .	13.26	No. 25, . . .	12.92
No. 12, . . .	12.84	No. 26, . . .	13.02
No. 13, . . .	12.00	No. 27, . . .	12.52
No. 14, . . .	12.90	No. 28, . . .	14.32

Taunton.

Milkman No. 1, . . .	14.14	Milkman No. 4, . . .	14.28
No. 2, . . .	12.54	No. 5, . . .	13.54
No. 3, . . .	13.02		

New Bedford.

Milkman No. 1, . . .	12.48	Milkman No. 16, . . .	13.36
No. 2, . . .	12.64	No. 17, . . .	14.30
No. 3, . . .	12.18	No. 18, . . .	12.80
No. 4, . . .	13.42	No. 19, . . .	15.02
No. 5, . . .	13.10	No. 20, . . .	13.90
No. 6, . . .	11.84	No. 21, . . .	13.54
No. 7, . . .	14.00	No. 22, . . .	13.60
No. 8, . . .	12.98	No. 23, . . .	12.74
No. 9, . . .	12.52	No. 24, . . .	13.36
No. 10, . . .	13.08	No. 25, . . .	13.26
No. 11, . . .	13.66	No. 26, . . .	13.84
No. 12, . . .	13.88	No. 27, . . .	12.64
No. 13, . . .	13.90	No. 28, . . .	12.82
No. 14, . . .	14.60	No. 29, . . .	13.46
No. 15, . . .	13.40	No. 30, . . .	12.82

These samples were taken at summer resorts during July and August:—

No. 1,	12.72	No. 18,	11.76
No. 2,	18 04	No. 19,	12.36
No. 3,	16.96	No. 20,	12.36
No. 4,	12.56	No. 21,	11.34
No. 5,	8.14	No. 22,	10.42
No. 6,	13.74	No. 23,	14.10
No. 7,	14.06	No. 24,	12.51
No. 8,	12.22	No. 25,	11.10
No. 9,	12.46	No. 26,	10.78
No. 10,	12.84	No. 27,	10.28
No. 11,	14.16	No. 28,	12.46
No. 12,	12.40	No. 29,	11.48
No. 13,	12.84	No. 30,	16.26
No. 14,	12.48	No. 31,	12.46
No. 15,	19.02	No. 32,	12.86
No. 16,	15.46	No. 33,	12.14
No. 17,	12.54		

The samples of abnormally high milk, 19, 18, 16, per cent etc., were probably cases where there was carelessness in properly mixing the milk, and the samples which our agent happened to get were taken from the top of the can or tank. In those cases we notified the parties, recommending more care in mixing, for the person who would be served with milk from the bottom of the can or tank would have that which was correspondingly poor.

In the cases of milk which tested low we took a second sample to strengthen our position, and in every case but one the second sample was an improvement on the first, confirming still further our theory that there exists too much carelessness about properly agitating and mixing the milk. In the one exception, to which allusion is made above, the sample taken at the first visit of our agent tested 10.28, and that taken at a second visit tested 8.14.

The principal critics of the law come largely from towns which have shipped milk for many years to Boston, where there is none of the tonic that comes from producer meeting consumer, and where cows have been bred for large quantities rather than for quality.

During the past year the newspapers have reported an increased attention to the sanitary phases of the milk question.

Medical and health bodies have been discussing them, and considering possible legislation. It is a fact that legislation has hitherto looked more after the commercial fraud of selling adulterated milk, or milk not of standard quality, than it has at the health phases of the case. It is also a fact that the modern advances in bacteriology have given definite and accurate data on which we can now base intelligent and advanced action. Hence there is a good opportunity for Massachusetts to take a forward step, and for the Legislature to do something looking to enhancing the quality of the State's milk supply. But such legislation should be discreet, and should, especially at the outset, guard against steps too far in advance of the ideas of producers, or which might tend to the annoyance of petty officialism. Michigan has a system of inspection which merely leads to publishing reports of what the inspectors find. The publicity of these reports is expected to work a correction of the evils noticed. A measure as mild as this ought not to arouse great opposition, and yet it would be strong enough to have a beneficial educational influence which would tend to correct evils now existing so far as producers are concerned. A favorable report would be a good advertisement of any producer. Any filthy or unsanitary conditions at the city end of the business among wholesalers or peddlers would require different action. I submit herewith a few samples of the results of Michigan inspection, as taken from printed reports of the dairy commissioner of that State:—

At Lowell.

R. Rider.—Cows clean; stables clean; ventilation good; sanitary conditions fair; uses well water.

J. Kramer.—Cows fairly clean; stables unclean; ceilings dusty and floors dirty; ventilation good; sanitary conditions very poor; uses spring water.

At Howard City.

A. S. Stodard.—Cows poor but fairly clean; ventilation poor; sanitary conditions fair; uses well water.

William O'Donald.—Cows clean; stables unclean; ventilation good; sanitary conditions fair; uses creek water.

At Big Rapids.

C. E. Draper. — Cows clean; stables clean; ventilation fair; uses well water.

M. Boynton. — Cows clean and in good condition; stables very unclean; ventilation fair; sanitary conditions poor; well water used.

A. Card. — Cows clean; stables low and extremely dirty; drainage poor; ventilation poor; sanitary conditions very bad.

At Cadillac.

C. J. Holman. — Stables unclean; drainage imperfect and manure allowed to accumulate near stables; ventilation fair; sanitary conditions poor.

E. N. Reynolds. — Stables fairly clean; ventilation fair; sanitary conditions poor; uses lake water.

M. Berridge. — Cows clean; stables clean; ventilation good; sanitary conditions of stables good, of yard poor; well water used.

At Belding.

C. E. Lewis. — Cows fairly clean; stables fairly clean; ventilation good; sanitary conditions poor; well water used; was feeding garbage from the house.

H. C. Angel. — Cows clean; ceilings of stables dirty; drainage poor; ventilation good; sanitary conditions of yard very bad; uses spring water.

G. C. Devine. — Cows part clean and part dirty; stables clean; ventilation good; sanitary conditions of yard poor; uses well water.

At Ionia.

A. M. Welch. — Cows in very good condition; stables exceptionally clean; ventilation good; sanitary conditions excellent; uses spring water; drainage good. Cows are cleaned twice a day; wells and ceilings of stables whitewashed twice each year; has clean, well-ventilated cooling room, and all modern appliances for handling milk in a neat and systematic way.

W. D. Place. — Cows clean; stables low, with clean floors but dusty ceilings; ventilation poor; sanitary conditions poor; uses creek water.

H. Jackson. — Cows part clean and part dirty; stables unclean; drainage poor; stables exposed to open scaffolding; ventilation fair; sanitary conditions poor; uses creek water. Manure is allowed to accumulate near barn.

A. E. Jackson. — Cows part clean and part dirty; stables unclean; drainage poor; ventilation fairly good; sanitary conditions poor; uses creek water.

G. Percival. — Cows part clean and part dirty; stables unclean, ventilation good; sanitary conditions poor; uses cistern water.

L. A. Cornell. — Cows clean and in good condition; stables in poor condition; ventilation poor; sanitary conditions of yard poor.

M. S. Sprague. — Cows fairly clean; stables unclean; ventilation fair; sanitary conditions poor; uses river water.

During the past year considerable time has been given by the acting executive officer of the Bureau to work in connection with the milk business in the "Greater Boston." This is a phase of dairying which last year sent over the railroads 11,798,191 cans of milk, — an average of 32,320 cans per day. If the farmers received on an average 20 cents per can, we have here an industry amounting to \$2,359,628 to the producers. The retail price in the cities varies considerably under different circumstances. Milk is being sold more and more in the grocery stores, and at a cut price. In not a few stores it is sold at less than cost, as a bid for other trade. We find retail sales made at all the way from 4 to 7 cents per quart. If we consider 6 cents an average price, the sales, which were 8,788,000 cans, amount to \$4,456,000. These figures relate only to the milk that is brought into the city by railroad by the large milk wholesalers. Other statistics are not available, because the milk is brought in in different ways. It is generally believed — and the best information that we can get confirms it — that over 25, almost 30, per cent more comes in by wagons from near-by territory. Dr. Harrington has kindly given me a list, showing that 5,232 cans daily are brought into the municipality of Boston. The competition of this wagon milk and of railroad milk has been very sharp this year. If, of the amount of milk sold by the wholesalers, the amount of adulteration should equal 1 per cent of the sales, it would amount to 87,385 cans of milk. From the stand-point of the consumer, at the average price of 6 cents per quart this means \$35,566 paid unjustly for water, — a \$35,000 steal. From the stand point of the producer, netting on an average 20 cents per can, it means a wrong of \$17,477. This amount could be easily doubled were we to take in the whole State, with such thrifty, grow-

ing cities as Lawrence, Springfield, New Bedford, Holyoke, Taunton, Fitchburg, Gloucester and others. No one would for a moment argue but what, were it not for the existing laws and the way they are enforced, the percentage of adulteration would be much more than 1 per cent.

The figures below give the amounts of receipts and sales of railroad milk—in $8\frac{1}{2}$ quart cans—as reported by the wholesalers' association during the year of 1897, also the figures of previous years, for purposes of comparison:—

	Received.	Sold.	Surplus.
January,	923,852	705,324	218,528
February,	835,115	639,952	195,163
March,	960,084	719,814	240,270
April,	976,996	733,298	243,698
May,	1,105,325	759,875	345,450
June,	1,115,234	752,038	363,196
July,	1,013,552	789,849	223,703
August,	966,058	720,374	245,684
September,	956,445	732,795	223,650
October,	1,037,764	751,944	285,820
November,	962,552	708,459	254,093
December,	945,274	724,850	220,364
Total,	11,798,191	8,738,572	3,059,619

	Receipts.	Sales.	Surplus.
1896,	10,772,108	8,087,378	2,684,730
1895,	9,856,500	8,040,732	1,815,768
1894,	9,705,447	7,657,421	2,048,026
1893,	9,263,487	7,619,722	1,643,765
1892,	9,212,667	7,315,135	—

The three million cans of surplus milk have been kept off the milk market by the contractors, thereby tending to steady the price and keep it more uniform than if the whole product was placed upon the market to be sold for what it would bring, as is the case with other articles of merchandise. This surplus kept off from the market has been made into butter by the wholesalers, and they return to the farmers the average jobbing price of butter, less the charge for manufacturing. This surplus milk has averaged to net the farmers 13.33 cents per can during the year. The lowest price was received in May, June and July, 11 cents per can; the highest in December, 15.34 cents. The price received for sale milk is the same as last year. It has been kept quite uniform from year to year, by the system in which Boston milk is handled. The price of surplus milk depends upon the market value of butter, and has averaged one-third of a cent more for 1897 than it did for 1896.

For the months of April, May, June, July, August and September, the price to the farmers at their several railroad stations was 19 to 26 cents per $8\frac{1}{2}$ quart cans. During the other months of the year, January, February, March, October, November and December, the price ranged from 21 to 28 cents. This range of prices is adjusted by an agreement between the producers and the wholesalers that the price shall decrease by a regular system as the distance from the city and the cost of transportation increases.

We present herewith a plan illustrating this. The vertical parallel lines represent the railroads over which milk is shipped, drawn as air lines. We have marked on each one the location of each milk-shipping station, and its relative distance from Boston as the railroads run. We have drawn across this map horizontal lines, showing the belts of the different prices. If the arrangement above alluded to between the producers and the wholesalers was lived up to literally, these horizontal lines in all cases would be complete and exactly parallel with each other. In some cases it is necessary to depart from the literal application of this rule, as where milk is taken from a branch road which crosses the main line on some other route. For instance, milk is brought to Boston from Barre by the direct line of the Cen-

tral Massachusetts, and also over the Boston & Albany road. By one way Barre is 108 miles from Boston, and by the other 64. But it would be difficult to pay different prices at the same place, and the 64-mile price must govern. These variations from the schedule are noted by dotted lines about the towns affected.

The milk laws of other States contain some interesting suggestions.

Minnesota prohibits the keeping of cows for the production of milk for market or for manufacturing the same into articles of food "in a crowded or unhealthy condition." The dairy commissioner is required to furnish all the dairies shipping milk to the city, and all the peddlers or venders of milk in the cities within the State, with blanks for the purpose of making a report of the amount of milk and dairy goods handled, "and all milk dairies, milk venders and milk peddlers shall send to the State food and dairy commissioner quarterly reports of all the business done by each and every such person, firm or company in handling dairy products during the last three months past, as designated under the different headings of printed blanks. No person shall sell or offer for sale any cream that contains less than 20 per centum of fat."

Minnesota is the only State, so far as we know, that has a law relating to clean cans. It is as follows: "Any person, persons, firm or corporation who receives any milk or cream in cans, bottles or vessels which have been transported over any railroad or boat line, where such cans, bottles or vessels are to be returned, shall cause the said cans, bottles or vessels to be emptied before the said milk or cream contained therein shall become sour, and shall cause the said cans, bottles or vessels to be immediately washed and thoroughly cleansed and aired."

Wisconsin authorizes its dairy commissioner to make regulations when needed concerning the cleanliness of utensils, rooms, buildings, etc., used in the sale of dairy products.

Chapter 425, Acts of 1894, is as follows: "No producer of milk shall be liable to prosecution on the ground that the milk produced by him is not of good standard quality, unless the milk alleged not to be of such quality was taken

upon the premises or while in the possession or under the control of the producer by an inspector of milk or by the agents of the Dairy Bureau or State Board of Health, or collector of samples duly authorized by such inspector, and a sealed sample of the same given to the producer.”

This was enacted in the expectation that it would in some way save innocent farmers from any hardship growing out of the enforcement of the milk laws. It has not accomplished any such purpose, but has hindered the prosecution of those who have sold adulterated milk.

Chapter 264, Acts of 1896, section 1, says: “No person shall sell or offer for sale or exchange, in hermetically sealed cans, any condensed milk or condensed skim-milk, unless in cans which are distinctly labelled with the name of the person or company manufacturing said condensed milk or skim-milk, the brand under which it is made, and the contents of the can.”

The Bureau has been asked during the year to pass upon the meaning of the word “contents,” in the last line. The popular opinion prevailed that it required either the weight or the analysis of the contents. The question was referred to the Attorney-General, who held that the word refers back to the words “condensed milk or condensed skim-milk,” in the second, fourth and fifth lines, and that the law would be complied with if the can should be labelled “condensed milk,” or “condensed skim-milk,” as the case might be. This seems to take out of the law what seems to be its spirit.

Ohio has a law which requires that the proportion of milk solids contained in condensed milk shall be in amount the equivalent of 12 per cent of solids, in crude milk, and of such solids 25 per cent shall be fat. Condensed milk cannot be sold in that State unless the same is made from unadulterated and wholesome milk from which the cream has not been removed.

In view of the great variation in the quality of condensed milk, and its increasing use, similar legislation may be needed in this State.

The sale of cream is increasing. Maine is the principal source of the cream in the markets of Boston and other

Massachusetts cities. Comparative statistics are not available at the time of making up this report, but the following compares six months of 1897 with preceding years : —

The Hampden, Me., creamery makes the following report of its business for the last three years, showing the increase in the use of cream (the figures are for gallons) : —

Thick Cream, 40 Per Cent Butter Fat.

	1894.	1895.	1896.	First Six Months of 1897.
Boston and vicinity, . . .	33,466	40,141	43,542	28,034
Beverly, Lynn and Salem, .	8,033	8,811	9,482	4,333

EDUCATIONAL.

The statute creating the Dairy Bureau imposes some educational work upon it. So far as this can be done by the acting executive officer, it incurs no extra expense, as he is a salaried officer. He, therefore, holds himself in readiness to respond to calls of granges, farmers' clubs, milk producers and others, for talks on various phases of dairying, as desired. He has answered eighteen such calls this year. Many of these talks have been illustrated by operating the Babcock milk tester, and in other ways so as to make them interesting object lessons as far as possible. In addition, the members of the Bureau, Dr. Lindsay, Dr. Peters and a few others, have, in exceptional cases, been engaged.

A bulletin on the care of milk has been prepared for circulation among the producers of sale milk. A circular of warning to butter-makers, regarding fraudulent cream "ripeners," has also been issued.

Last August a convention of dairy and food commissioners was held in Detroit, and a permanent organization effected. The States represented in the governing board are Ohio, Michigan, Iowa, Pennsylvania and Massachusetts. The association can be of great value in furnishing a means for an interchange of ideas, experiences and practices. Though much of the time of the convention was occupied with rou-

tine business, many valuable points and suggestions were received.

FINANCES.

The following is the manner in which the appropriation of \$7,000 has been expended: —

Members of the Bureau, travelling expenses and attending	
meetings,	\$446 00
Agents' salaries,	2,350 50
Agents' expenses,	2,473 08
Chemist,	858 00
George M. Whitaker, travelling and office expenses, sup-	
plies, mileage tickets, etc.,	729 41
Educational work,	102 71
Printing,	28 92
Supplies,	11 38
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Total,	\$7,000 00

GEORGE M. WHITAKER.

Accepted and adopted as the report of the Dairy Bureau.

D. A. HORTON.
GEO. L. CLEMENCE.
J. L. ELLSWORTH.

